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COOP'S TECHNOLOGY DIGEST

-A Timely Report On The World Of Communications-

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COOP'S TECHNOLOGY DIGEST

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The Cable Wars Heat Up

Regional centre Whangarei is anticipating cable television. In the past six weeks, the local newspaper (Northern Advocate) has published a pair of front-page headline stories about the **Spectrum Cablevision** pending arrival. Nobody outside of Whangarei seems to notice.

After 18 months of bravado public statements, Greymouth's **Pacsat** is up and operating in 250 homes with satellite delivery of TNT + Cartoons, Discovery, CNN and others. Greymouth now has more television channel choice than Dunedin or Christchurch but national network TV3 is not on the dial; the result of what Pacsat's John Rutherford describes as, "*The copyright mess*" (see CTD 9503, p. 2). Nobody outside of Greymouth appears to notice.

In the community of Marton, between Wanganui and Fielding, a young electronics technician named Jason Jones has strung cable from his home satellite dish to several dozen neighbours. Following fence lines and property boundaries **Rangitikei Neighbourhood Cablevision** is lot by parcel creeping throughout Marton at a steady pace. An agreement with the local power company will allow the cable system to grow from its present neighbourhood status to community wide. Jones will add as many as five new channels when Palapa C1 satellite goes into operation in February. Nobody outside of Marton has noticed.

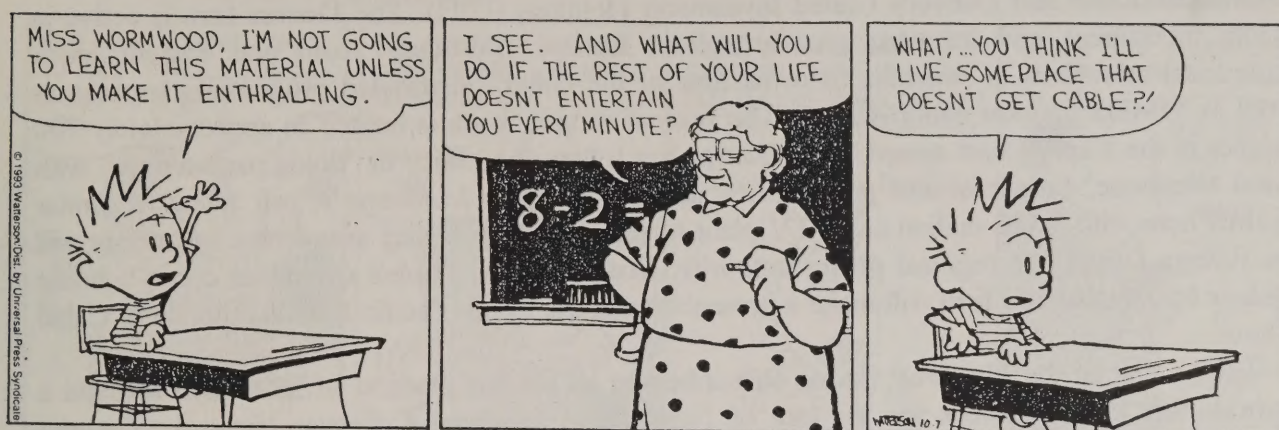
In Auckland's Parnell district, veteran motel operator Norman Barry has installed a new cable television quality headend with 20 channels on board. Two satellite antennas are now installed, two more will go in as soon as the roof can be strengthened with 2 tonnes of new steel. To support the expansion, the Barrycourt is swapping out nearly 200 television sets with new "cable ready" models from Goldstar capable of tuning more than 50 channels of programming. They will need to because the Barrycourt is also adding a 30 channel pay per view in-room movie system from Cable Vision Systems (Mairangi Bay). With more than \$100,000 invested, Barry has obtained a Network Operator Status from the Ministry of Commerce and his 50 channel service will wind its way out of the Barrycourt into the alleyways and streets of Parnell under the banner of **Barryvision**. Few have noticed this activity.

In Hastings a fellow motel operator, John Lynam of The Hastings Motel, has slowly expanded his master antenna facility by adding a trio of satellite dishes with more planned. Like Norm Barry, Lynam too has obtained Network Operator Status and his cable system of 20 plus channels will continue, snaking its way beyond the confines of the motel proper into the surrounding countryside. Unlike the others, Lynam's service continues to carry Sky programming but only within his motel proper; outside, the neighbours must make do with television service from America, Japan, Australia and throughout Asia.

Along Doubtless Bay **Far North Cable TV Ltd.**, also holding a Network Operator Status, has begun trenching in .500 coaxial cable in anticipation of a February launch for its 20+ channel cable

Calvin and Hobbes

by Bill Watterson



Courtesy: Universal Press Syndicate

service. Seven satellite dishes have been installed at the headend site in Coopers Beach, four racks of electronics are going together to process programming services from six different satellites. More than 1100 homes will be passed by the cable system when mature.

In Howick a joint project by Bay of Plenty Electricity (BOPE) and Sky is nearing first phase completion; more than 800 homes are likely to be reached within two years. In Tauranga, several subdivisions are being prepared for cable television by a developer who considers multiple channel television service to be as important as telephone and electricity. In Gisborne a group of locals are planning a city wide cable system and electronic mapping is underway. Outside of the immediate area of those possibly affected, virtually no notice has been taken of any of these projects. And this is but the tip of an iceberg most have chosen to ignore or have simply overlooked. Cable television, outside of the major big-three hitters, is happening in New Zealand. One measure of the interest: Trade association SPACE Pacific reports advance registrations for its South Pacific Region Satellite & Cable Show coming January 23-27 in Auckland are more than double the expectations. Of three separate equipment and supplier exhibit halls set aside for the trade, two are filled and the third is expected to be full within weeks. A fourth exhibit hall will be opened to accommodate the overflow response from suppliers of cable and satellite hardware from Europe, America, Asia and the South Pacific. Suppliers queried by CTD universally report they will be there as exhibitors because of a recent considerable upturn in queries from the South Pacific for their equipment and services.

The Big Three Heavy Hitters

Kiwi Cable's Jack Matthews, angry that the Commerce Commission has granted approval for an exchange of corporate stock resulting in Telecom (NZ) being a direct participant in over the air pay television service Sky, said:

"(The decision) shows a surprising lack of understanding of the issues facing a converging telecommunications market. (My firm) Kiwi Cable will invest hundreds of millions of dollars in cable infrastructure throughout New Zealand if it is confident that fair competition will prevail. Without confidence in the market, we will have to reconsider our options."

Matthews, a disciple imported from the US cable industry, has been politicking since his arrival here early this year to create a "level playing field" for the development of his firm's vision of the "Information Superhighway." Kiwi Cable, once totally owned by New Zealanders, is now largely foreign owned and is a corporate joint venture of Minneapolis headquartered Todd

Communications and Denver's United Investment Holdings (UIH). The Denver firm is active in cable investment and infrastructure throughout Europe (Portugal, Spain and eastern block countries) as well as in Australia (it owns four of the Galaxy distributed programme services as well as MMDS licenses nation-wide). The present service reach is limited to approximately 700 homes in the Kapiti Coast area. UIH in Europe has followed a policy of "doing partnerships" with local telephone, broadcast and power firms and according to Matthews it will follow a similar format here with a \$40 million cable TV plant to serve the Hutt Valley area where its partner will be Energy Direct, the regional power authority. Many of Kiwi Cable's objectives could become clearer by January; the firm will make a presentation at the South Pacific Region Satellite & Cable Show.

The second of the 'big three' has no subscribers at all but has pledged \$12.3 million to build a hybrid fibre cable network for the city of Nelson and environs. Cyberstar Networks General Manager Chad Raube is hesitant to reveal how the firm plans to approach its 18+ channel service except to admit that the US popular mixture of fibre optics and coaxial cable is at the heart of their planned system design. Cyberstar is flush with cash having sold sizeable (more than 250,000 subscribers) cable systems in the upper midwest of the states and they have established a full-time office in Nelson (04-546-8200). The Nelson system will not be their first outside of the USA proper; the firm also operates in the Virgin Islands. Cyberstar will neither confirm nor deny a persistent report that they plan a 30 metre (!) satellite dish which by its very size would be suitable for direct reception at Nelson of the US domestic satellite signals (see CTD 9507; p. 10). Raube and others from the firm have persistently stated that while Nelson will be their first New Zealand system, they view the entire country as potentially doable.

There is a difference of opinion here. Cyberstar, following the North American model, looks at each community in a cable business sense as a stand alone business. Carried to its extreme, this "model" fits perfectly the approach of Barryvision or Rangitikei Neighbourhood Cablevision. First you build a headend (signal receiving and processing centre), then you begin to spread the cable network out into the immediate vicinity. If everything goes well and according to plan, in four to five years Rangitikei will have service lines to virtually every portion of 5,200 population Marton. Barryvision, starting in central Parnell, could in theory expand to take in all of the Auckland metropolitan area but of course that is highly unlikely.

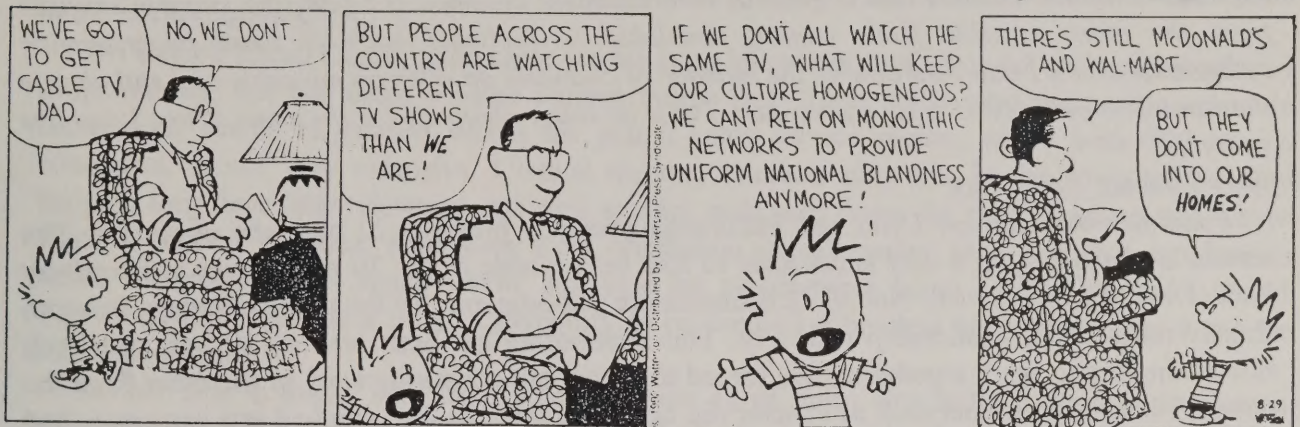
Traditional cable considered any region that could be served from a single headend as a part of the system operating territory. Cable amplifiers, required in any cable plant, are distance limited and as a cable plant grows such that more and more amplifiers must be added along the cable lines to reach distant neighbourhoods or homes, you reach a point where no more amplifiers can be added without significant degradation to the cable signals. Thus cable TV expansion has always centred around the natural "reach" limitations of the equipment. For this reason, each community and each suburb within a larger market (such as Auckland) has developed its own "local" cable service.

Kiwi Cable and the third group in 'The Big Three', Telecom (NZ), have a different vision. Where coaxial cable has limited reach because of amplifier parameters, they plan to substitute fibre optic cable. This allows an entire region, all of an island (such as North) or even an entire country to be served from a single headend. Why?

Because fibre optic cable as a mainline trunk transport system has few of the limitations of standard coaxial cable amplifiers. A headend in Wellington region could just as easily provide service signals to Kaitaia as the Lower Hutt, or Christchurch and Dunedin. And this is a major

Calvin and Hobbes

by Bill Watterson



Courtesy: Universal Press Syndicate

change in how entrepreneurs view the potential of cable television. It impacts all planning, all thinking.

Telecom's fibre optic trial in Auckland suburbs New Lynn and Pakuranga has been an experiment. In an interview he sat for a future issue of Metro Magazine, Telecom's cable TV trial manager John Proctor insists Telecom is taking the trial "very seriously." He speaks to Metro's Tim Watkin glibly, mostly off the record, giving nothing of commercial sensitivity away to those who might like to really know what Telecom's cable plans are. He tells Metro that he cannot say how much the project has cost (in truth, he probably does not know), when the cable trial will be extended to additional areas, or what marketing lessons they have learned from the trial. In other words, Telecom is not talking. Except to say, he tells Metro, that if Telecom did roll out fibre optic cable to New Zealand's 1.1 million homes, the project has been forecast to cost \$710 million; \$645 per home. The likelihood this is a correct number is very small indeed since similar (if not identical) systems being installed in the UK are averaging 900 pounds Sterling (more than NZ\$3,000 per home at the current exchange rate) for each home passed.

This discrepancy points up one of the major challenges facing Telecom's ambitious plan to roll out fibre optic television to all of New Zealand; if people like Proctor really believe it will cost \$645 per home, and it turns out to cost NZ\$3,000 per home, what does that do to the financial base of Telecom? This is a serious worry and anyone at Telecom who comes out in support of Proctor's \$645 per home forecast could end up working in a Pizza Hut some years from now if it turns out to be wrong.

So the Telecom philosophy, not unlike the Australian rollout of hybrid fibre plus coaxial systems there, is that cable television is a national service, not a local service. It is for this reason that Telecom has been trying so hard to increase its influence over the only existing national pay TV service, Sky Network. For Norman Barry's Barryvision, or Jason Jones' Rangitikei Neighbourhood Cablevision, Sky is not an important player; not even an ingredient in their plans. Barry and Jones have written off any co-operation from Sky, think little about Sky's presence except to use the existing established Sky monthly service fee of approximately \$50 per month for 4 and one half channels as a "benchmark" for pricing their own home grown cable services.

John Lynam's Neighbourhood Cable TV project in Hastings is a suitable example. *"I like their \$50 per month range charge; it establishes in the mind of the consumer how much pay television is worth, or at least how it is priced. They have a sports channel, a movie channel, a news*

channel, a nature channel and a general entertainment channel. If I can find suitable services from the many satellite feeds coming available to replicate each of these programming categories, and if I can then double the number of channels on offer on my cable and still charge the same \$50 per month, I have a winner. Twice as many channels for the same price; I can live with that."

Why Telecom Needs Sky

Telecom's trial in New Lynn and Pakuranga presently provides 22 channels of service. The service is expanding on a very small scale to also be available to the 20 new homes in Broadway Park (New Market) as well. Not all 22 channels are full-time and for the prime offerings Telecom already relies on its relationship with Sky. This relationship has been tenuous at best with each side attempting to work together where forced to do so, but constantly leery of the other from the outset. Telecom personnel such as Proctor did not know that Sky had climbed into corporate bed with Bay of Plenty Electricity for a Howick cable development system until it read the report here in CTD yet the two firms communicate virtually daily on other joint ventures. Proctor says:

"The technical side we are fairly comfortable with because we do a lot of that around here. But you need content and we don't have those skills. We're just not a content company."

In other words, the Telecom mind set today, as always, is that they operate an electronic pipeline. You come to them with some form of information you wish to send to someplace else and they will rent you temporary (or full-time) use of "their pipe." Telecom, like virtually all telephone firms world-wide, are very uncomfortable (and terribly inexperienced) when it comes to dealing with the "content" that goes down the pipe. They are superb technical people but not very good at human skills. And so they need the expertise of Sky's programming selection and bundling people. Fair enough.

But a representative cable television service that covered a significant number of New Zealand's homes would not be totally satisfied by Sky's brand of imported (largely from the USA) cable style programming. World scale TV player Rupert Murdoch recognises that merely importing foreign programming, no matter how slick it may be, is not the answer to serving the needs of widely divergent cultures. New Zealand On Air funding of Kiwi-made product is another example of how local (read national) needs must be met at the local (again, read national) level.

Murdoch's latest agreements are with national programmers in Indonesia, Malaysia and India. In return for allowing his imported programming into their countries via his STAR TV service, he routinely grants each country spectrum space on his satellites. In this way he gains entry to a country for his imported programming, and, simultaneously picks up new sources of national programming which he further distributes on satellite. He wins both ways: New markets for his world class programming (such as STAR's Prime Sports) and a new set of national programme channels which he takes back to satellite to distribute elsewhere. His recent agreement with Japan allows him to bring in five channels if he promises to take back out four.

Telecom has a much smaller scale plan at work in New Lynn and Pakuranga. To create Kiwi content for Kiwi viewers, Telecom has agreed to subsidise start-up programmers. One, Small World Television, gained channel space for their business in Telecom offices and money in support of their programme creation. They turn out product with titles such as "Green and Groovy," "Creative Juices," and "In Aoteroa" for distribution to the 600 home trial. Under normal broadcast or cable economics Small World Television would never be able to support itself with a potential audience of just 600 homes. Telecom sees this subsidy as an investment in their future, and, by the way, the programmes created by Small World can now be exported by Telecom to

other cable operations elsewhere in the world, such as Telecom's parent Bell Atlantic cable projects in the north-eastern USA.

Kiwi Cable's Kapiti Coast region cable service is no less mindful of the need for locally produced programming, but has taken a more current events tact. Their studio and production schedule focuses on events of interest within the actual cable service region, which with 700 homes connected, is not very extensive. Council meeting telecasts play fine in the town where they happen; they have little relevancy and even smaller audiences down the road 20 kilometres where another council presides. Kiwi sees local origination programming as a tool that emphasises "local." Telecom has a bigger vision, and sees the programmes being created by Small World Television and others as a form of inventory to be used on a timeless basis where ever it can be sold world-wide.

Neither firm is totally sure from where or how all of those wonderful promised programme channels will travel to New Zealand. Kiwi Cable tends to side, because of their American ownership, on the satellite delivered model. Stockholder UIH is a top level player with the kind of corporate connections to make programming available, to Kiwi Cable, if in turn Kiwi Cable can grow into something significant. Kiwi Cable started off paying CNN US\$25,000 a year for rights to carry the satellite delivered signal on their cable at a time when the company had but 300 subscribers. That works out to US\$83.33 per cable subscriber per year. Obviously you can't have a net profit with those kind of programming costs. Sky, on the other hand, for the same CNN service pays under US\$1.20 per subscriber per year. And that's another reason why Telecom wants to be in the driver's seat at Sky. Kiwi Cable as a point of corporate philosophy believes that established, world class programmers such as ESPN, Discovery and the Showtime movie service will drive a cable system here to financial success. Telecom hired an American cable executive, John Clark, to direct their move into the larger scale pay television arena., partially in recognition of America's special expertise in this area. In Australia the competitive telephone carriers (Optus and Telstra) have each partnered with a major (US) programmer, cable or satellite service provider primarily to gain expertise in the content end of the business. Telecom's Proctor in admitting, "*We do not have the (programming) skills*" places his finger on the primary reason why Telecom's cable TV business plan seems to fragmented to outside observers. All of the fibre optic technology in the world is meaningless if you only have the ability to transmit test cards to subscribers.

What Sky Offers Telecom

For Telecom to compete in the pay television service business, first they need content; world class content. It is not as easy as going into the marketplace and shopping because most cable programmers are owned and controlled by cable operators. And cable operators dislike telephone companies no matter where they are. Telstra and Optus tried very hard to buy programme content and were frustrated at every turn. Eventually both took on cable operators as partners and then, suddenly, the programming doors began to open.

Telecom, by controlling Sky, may believe it can ride on Sky's content purchases to programme its own pay TV network. There is some regional precedent: Australian Foxtel has invested into Galaxy's business primarily to purchase through Galaxy programming for carriage on its cable TV system being launched there. Galaxy, with strong cable TV ties and investment, is able to acquire programming that Foxtel cannot buy direct. But there is a price.

Nobody at Foxtel nor Galaxy is admitting the terms of the arrangement, but Australians familiar with the agreement insist Foxtel is to pay Galaxy A\$25 per month (per home) for the ten Galaxy signals (the same ten signals sell for A\$49.95 to retail customers). That's a pretty healthy mark-up

for ten programme channels that might be costing Galaxy as much as A\$12 per month at the outside.

Sky's John Fellett has repeatedly cited his concern about Telecom to explain his reluctance to approve the resale of his ESPN 'product' to firms such as Pacsat for use in Greymouth. *"If I allow Greymouth to use ESPN,"* he notes, *"then I will have to allow Telecom to use it also,"* something he would clearly prefer not to do. Access to software, programming, is everything in the cable TV game. Fellett knows this, Telecom is learning. All of those alliances in Australia are rooted in this fact.

Will Telecom really enhance its ability to obtain programming if it "controls" the Sky operation in New Zealand? Perhaps Telecom NZ would do better by finding a world-class cable operating firm as a partner for its own roll out of pay TV here. That is, after all, precisely what Telstra and Optus have done for their pay TV rollouts in Australia.

In the Kiwi Cable mindset, the combination of Sky's programming connections and Telecom's obvious inside track on placing fibre in front of 1.1 million Kiwi homes is a direct business threat. If you own the only bus in town and are partners with the only people who sell gas, well ... you have the makings of a monopoly.

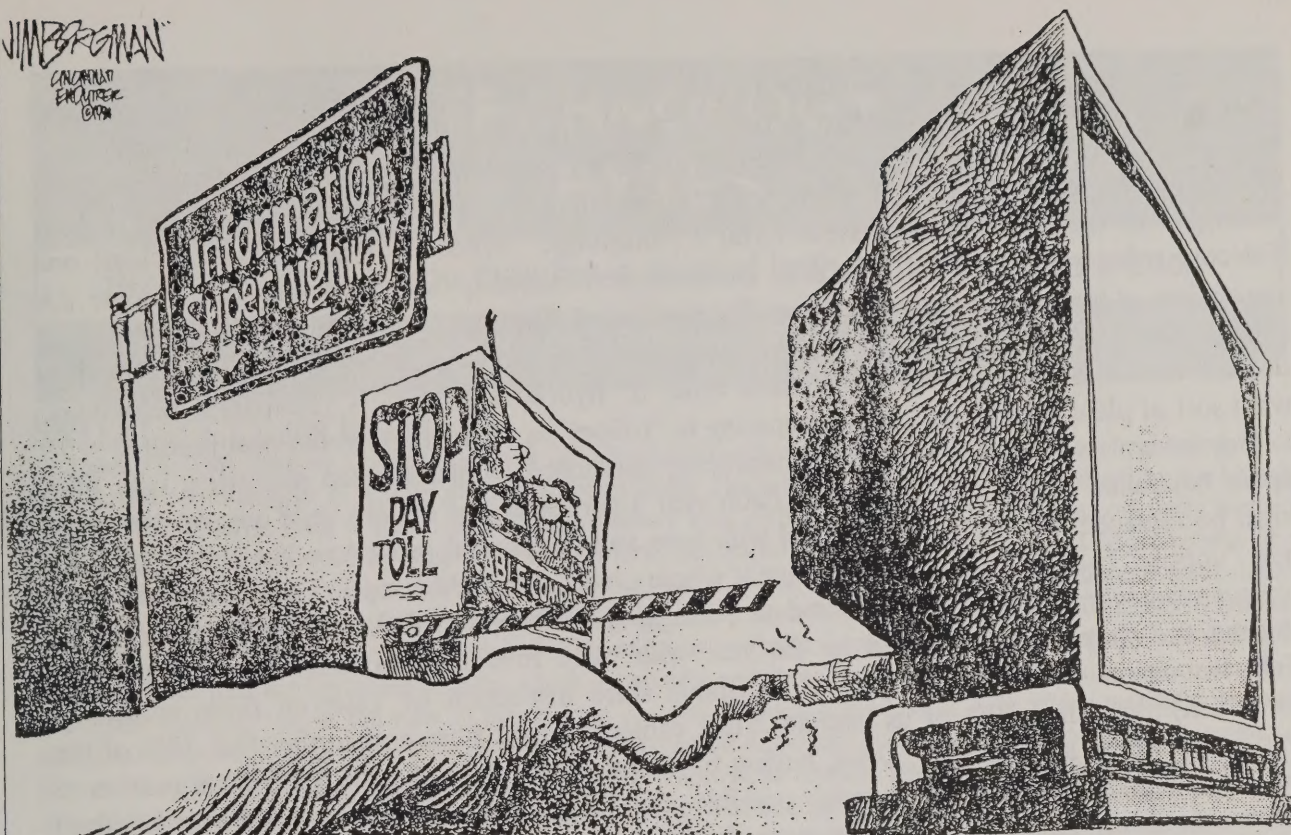
So why doesn't this upset the people at Cyberstar Networks the way it does Kiwi Cable? Why weren't they equally vocal during the recent Commerce Committee hearings? They won't say but certainly one of the elements is the onrush of new programming choices as the skies over the Pacific begin to fill up with satellites. TVNZ's Karl Rossitter, the New Plymouth based planner for their international operations, sees no fewer than 500 available "transponders" above the Pacific within 4 years. With each transponder capable of handling one analogue or up to 10 digital programmers (simultaneously), capacity for programmer distribution in the Pacific is no longer a question of "If available," it is now simply "When available." Cyberstar recognises this as do the smaller "mom and pop" Neighbourhood TV system planners now getting into operation throughout the country. Two years ago, not having ESPN meant not having sports. Six months into the future, not having ESPN will not be a big deal because there will be several competitive sport services available from the newer satellites. And try as they might, neither Sky nor Telecom can control them all. So is Telecom's move to control Sky as cut and dry as programming content domination?

Telecom NZ would like people to believe they operate "independently" from the corporate processes headquartered at Bell Atlantic in the USA. As previously reported in CTD, Bell Atlantic which one year ago was a major backer of hybrid fibre coax (HFC) systems has now decided that the type of system Telecom installed in New Lynn and Pakuranga is *passé*; no longer suitable for their 21st century planning. It was this precise HFC design which Bell Atlantic had asked for American Federal Communications Commission approval to build in several north-eastern (US) states. Then, in mid-May, Bell Atlantic withdrew its application for HFC before the FCC stating it was now in favour of the next level of technology, something called Switched Digital Video (SDV). Millions, tens of millions of planning and resource dollars had gone into their HFC system plans. Why would they withdraw their FCC applications only weeks before approval was scheduled?

Bell Atlantic VP Mark Wegleitner wrote in US trade magazine Telephony:

"Since our HFC applications were filed with the FCC, significant advances in technology have occurred in the availability and pricing of new (SDV) technologies. Switched digital video has improved so rapidly that it has raised serious doubts about the wide scale use of HFC. We

JIM BERGMAN
CARTOONIST
ENGLAND
1984



Courtesy: San Francisco Examiner

changed our mind at this 11th hour because to do so is better than being stubborn about something that doesn't make sense."

HFC doesn't make sense? That's what Wegleitner said. Does that mean that the New Lynn and Pakuranga trial test system, also, does not make sense? What does Telecom NZ say about this?

In the forthcoming Metro magazine piece, Telecom's John Proctor is quoted as follows:

"We are still looking at the options. (But) our choices on what we are (now) doing technology-wise were made three years ago, if not before that, and the technology is moving real quick. We have always said this was a pilot ... we were never committed to promising that what we installed for the pilot system would in fact be what we are rolling out for (all of) New Zealand." Proctor is also quoted in the Metro article with "...and when we get into switched digital video..."

So when might that be? Timing is of course everything.

Parent Bell Atlantic suggests they will require "at least two years further refinement of the SDV technology before we are able to roll it out." To support their changeover from HFC to SDV, BA acquired this past May a US firm called Broadband Technologies; a leading research house in the SDV field. And Broadband spokesmen are quick to point out that while their SDV development work has come a long ways from the early trials, "We are several years away from field usable hardware."

Where does that leave Telecom NZ?

In Australia they are rolling out tens of kilometres per day of fibre and coaxial lines, headed for the eventual placement of pay TV in front of or behind a projected 4 million households by the turn of the century. Here in New Zealand, Australian firm Bell IRH has been conducting seminars

since late in September on the techniques being utilised by the Australians to accomplish this rapid rollout feat; seminars given first to personnel from Telecom and more recently scheduled for personnel from BCL. The Bell IRH seminars focus on aerial construction practices, a procedure which makes use of existing utility poles rather than the more expensive and far slower underground technique used in New Lynn / Pakuranga. Where is this headed? At least one Telecom source advises CTD, *"We plan to commence rollout of an overhead plant October 23, regardless of how the courts rule on our Sky purchase."* That is this October 23.

Telecom is juggling programming, hardware installation, the control of Sky and the end of decade availability of SDV all at the same time. If hybrid fibre coax is yesterday's technology, what sort of plant might Telecom be preparing to "rollout" in their first-past-the-post gesture?

For several years Telecom's rate of replacing antiquated copper twisted pair wires with fibre optics has fallen behind a 1 for 1 ratio. Each year a percentage of the old style copper wire plant must be replaced because it has decayed with time and the normal procedure has been to not put new "copper" back in but rather to replace it where practical with fibre optic lines. It is this 1 for 1 replacement where Telecom is reported to be lagging. This year, 1995, the trend appears to be shifting and they could even end up the year with more fibre installed than copper taken out. Telecom claims (the numbers are not verifiable since inspection of Telecom route records is forbidden) more than 70% of its intercity trunk cables are now fibre and further that 75% of the trunking in urban areas is fibre. Alas, having fibre optic "cables" in place is but a small portion of the total equation required to make possible two-way, interactive, broadband (read video) communications. The fibre is nothing more than a highway; still missing is the vehicles to run on the highway and the fuel needed to make those vehicles operate. That's where the switched digital video and content challenges fit. Without both vehicles and content, the fibre being rolled out by Telecom is quite useless for the near term inauguration of a true information superhighway to New Zealand homes and businesses.

By gaining control of Sky, Telecom satisfies both content and vehicle needs with a stopgap, temporary measure. By operating Sky to its bidding, Telecom gains use of a vehicle (the Sky semi-national transmitter system) that will allow it to establish a roadblock in the path of the likes of Kiwi Cable. Sky can increase its channel offering (by using additional UHF frequencies or in combination with the Telecom controlled MMDS channels; see CTD 9502, p. 2) and in the process contract for more of the ever increasing programme sources now becoming available to the region via satellite. If Sky could grow to a 12+ channel system of over the air pay TV, through the combination of UHF and MMDS, that's 12 separate programme sources coming in via satellite that Sky (read Telecom) could pre-empt others such as Kiwi Cable from contracting to carry.

All of this will buy Telecom the much needed time it requires to get its fibre optic SDV house in order. And as it looks more and more like 1998-2000 will be the likely period when SDV is finally ready to toll, in the interim Telecom with Sky under its thumb can not only tie up programming but also proceed in an orderly fashion to slowly rollout its own fibre optic highway. For regardless of how the SDV technology finally shakes out, when it ultimately arrives here it will still require the fibre optic highway to operate. Thus nothing major is risked by continuing to rollout fibre at a pace which suits Telecom.

As Proctor told the Metro interviewer:

"You've got to look beyond cable TV to perhaps start seeing why we're so interested in this business, because it is not just television."

TECHNOLOGY BYTES

...BITS and BYTES you may have missed in the rush to make a buck ...

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SATELLITE TV and RADIO

AsiaSat 2, long delayed lift off to planned 100.5E orbital position, is now rescheduled for a launch window of "November" according to STAR TV sources in Hong Kong. The satellite's launch has been delayed by the launch failure of the Chinese Long March 2 rocket in late January with ApStar 2 on board. The Chinese originally blamed the AP2 failure on an "exploding satellite," a factor which manufacturer Hughes promptly denied. More recently, the Chinese have shifted the blame to an "unexplained wind shear" in the middle atmosphere after launch. Wind shears are strong high speed air currents that are very narrow in height. Aeroplanes encountering them often report navigational and flight control problems. The original study of frame by frame video footage taken during the launch failure showed flames near the top of the rocketry which apparently contributed to premature ignition of the second stage, essentially blowing it up in full view of the tracking cameras. Following the loss of AP2, which was fully insured, insurance firms world-wide have shown no interest in covering subsequent Long March flights. Without insurance the owners of the AsiaSat 2 satellite were not inclined to approve the launch. The loss of AP2 followed on the heels of a similar loss of an Australia satellite (Optus B2) also at the Chinese facility.

STAR TV sources have told CTD that while the plan for programming up to 8 of the satellite's transponders with MPEG 2 digital are in process, *"the initial transmissions from AS2 will be in analogue format for an indefinite period of time."* Murdoch's STAR TV has made numerous programme carriage deals with broadcasters in Japan, Indonesia, Malaysia and India to relay their programming within the 8 transponder spectrum space STAR has reserved. These programmers, including as many as 15 from Indovision (Indonesia), are all dependent upon the availability of suitable DVB Compliant MPEG receivers in the consumer marketplace. And there is a glitch: DVB Compliant MPEG receivers have yet to begin mass production and in fact the first trial engineering models for testing purposes to be available in the Pacific will not arrive in the distributor's hands until December. Thus any programmers who appear on AS2 within the Murdoch operated transponders, in MPEG format, would be greatly handicapped because very few (if any) receivers capable of receiving the transmissions will be available. STAR TV will itself bring 5 free to air and up to 5 additional pay television services to the STAR TV package. Other programmers waiting for the launch include Germany's Deutsche Welle which has leased a full transponder and which intends to use only 25% of it for its own 24 hour English and German language transmissions. DW is actively seeking additional European broadcasters to share their transponder in MPEG 2 format. The most likely scenario to develop: When AS2 is launched and on station, within 30 days test transmissions could commence but they are likely to be analogue and essentially duplicate feeds of the present STAR TV services now appearing on AsiaSat 1. Deutsche Welle still hopes to be available "in some format" on AS2 as early as 1 January, and while it would prefer this be MPEG 2, has agreed that if the receivers are simply not available, it too would consider using analogue transmission until the receivers do become available. Deutsche Welle's Director of International Development, Dr. Burkhard Nowotny, will be visiting Australia and possibly New Zealand in November (fax +49-221-389-2784).

Optus B3 service signals into New Zealand, on "high Performance Beam" in use by DTH programmer Galaxy, are from 3 to 5 dB lower in signal level than still operating companion service on B1. Galaxy is switching from General Instrument Digicipher to NTL / Iredito MPEG format with its expansion to B3. The B3 coverage into New Zealand has "cleaner footprints" than B1, indicating to Optus engineers that B3 is a superior satellite because less of the signal available "spills" outside of the intended (Australia only) coverage area. Formal signal measurement tests of the B3 Galaxy signal levels over all of New Zealand are underway as you read this but the bottom line is already evident: Galaxy service to New Zealand is not going to be practical for DTH purposes even if the Australian service did decide to market here. A just-getting-by dish size of 3.5m or larger would be required at the best NZ locations and quality rain fade free service would require dishes as large as 7m on the present B3 transponders. Because of higher data rates (more bandwidth) the "threshold" on the B3 NTL based service is 6.3 dB for PACE receivers whereas on

B1 with the narrower Digicipher 1 compressed service, threshold is closer to 5.2 dB. This means dishes will have to be larger for B3 service than was required for B1, and with expanded bandwidth in the future, still larger dishes will be required. In Australia, contract installers have begun making DTH system installations using a 1.2m antenna as "standard" in Brisbane region, as small as .9m elsewhere. To date, the DTH installations are getting antenna and mount, LNB and feed and having coaxial cable run into home but no 'IRD' (integrated receiver descrambler) is being installed. Customers are being told the "decoder units" (IRDs) will not be available for sometime yet. A Galaxy source advises CTD, *"There are software problems to be sorted out; we are scheduled for 30,000 receivers to be delivered to us in November."* There appears to be no firm pattern to how long customers of Galaxy are being told they will have to wait for receipt of their "decoders"; some Brisbane installers are saying "Not until January" while elsewhere customers are being told, *"A few weeks."* The Galaxy Digicipher 1 service on B1 satellite has a "drop dead" date of 15 November but that could be extended if Galaxy has not completely sorted the software problems with the new NTL / Iredito system by early November. Galaxy's B1 service has been running "open" (MPEG but not conditional access) on Asian Business News, Chinese Television Network, and ANBC recently with their music channel "Red" also in the clear some days.

American owned satellite operator RIMSAT, using orbital locations registered to the Kingdom of Tonga (see CTD9405, p.2), was taken over by the Russian commercial space agency Inforcosmos on September 10th. A massive international legal and political battle ensued. The Russians claim Rimsat is in default on payments to them and they assumed electronic control of Rimsat G1 (130E) and G2 (142.4E) to protect their property from misuse. Within hours of taking over the flight and control of the two RIMSAT satellites, Indian based Asian Television Network (ATN) was dropped from G2's transponder 6 and the transponder remained silent for several days time. The Russians had notified all RIMSAT customers by fax in mid-August that they were going to assume fiscal take-over of the RIMSAT satellite business and in their faxes directed all RIMSAT customers to make their payments directly to Inforcosmos in Moscow. The Russians explained that ATN was dropped from G2 because of its failure to be current with its payments for use of its transponder. Within 24 hours of assuming control of G1 and G2, the United States Department of State filed a "strong protest" with the Russian government and demanded that operating control of RIMSAT be handed back to the American owned company. Several influential American politicians then took to the floor of Congress to publicly demand that the Russians return the satellites to the control of the American company. By September 13th the Russians had backed down and ATN was back up on G2. The response to Australian backed Papua New Guinea EM TV was typical of RIMSAT customers: *"We don't know who to send our current payments to, and we are utterly confused by this situation."* The Russians, during their brief occupancy of the twin satellites, had also notified the RIMSAT clients of an increase in transponder rental fees of 100%, effective immediately. Rimsat fees for a C-band transponder are typically US\$2 million per year, approximately half of the cost of similar capacity on PanAmSat PAS-2, for example. A 100% increase would have established RIMSAT rates that essentially duplicated those for PanAmSat. The future disposition of the Inforcosmos vs. Rimsat dispute remains very much up in the air at press-time with a US government brokered stalemate as both sides attempt to find a common settlement ground.

The SPICE Channel, after announcing that it would have a Ku band "Adult Programming Service" available in the South Pacific by year's end (CTD 9505, p. 14), has now moved its start-up date to "first quarter of 1996." The service had not announced a satellite carrier and speculation had moved from PanAmSat after the firm said they would never accept "adult programming" to both RIMSAT G2 and JCSAT-3. RIMSAT G2 has an unused Ku band transponder that would be somewhat suitable for coverage of eastern Australia and perhaps New Zealand, JCSAT-3 has several Ku band transponders capable of serving virtually all of Australia and New Zealand.

Palapa C1 satellite, scheduled for US (Atlas) launch in January to replace ageing B2P satellite at 113E by late February, has three separate C-band footprint beams on board. Some of these operate below the normal 3,700 MHz region and will require non-standard receivers, but those new transponder frequencies are reported to be only available for Asia proper. In our direction, one of the C1 footprints is very similar to the existing B2P footprint which means services on transponders using this footprint will not reach into New Zealand (nor eastern Australia) except at levels requiring 7m and larger dishes. The third footprint places a 31 dBw+ footprint over New Zealand, essentially the same as Rimsat G2's EM TV signal here now, which translates to dish sizes of 2.5m and up. Palapa has not revealed which of the present 20 TV programmers currently utilising B2P will be using the "south Pacific" beam footprint transponders on C1.

Television Corporation of Singapore (TCS) launched Mandarin language 18 hour per day service into Taiwan and mainland China 1 October using an MPEG programme "channel" on PanAmSat PAS-2. The service has been



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and The New Zealand 'Herald' advertising (below)

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announced for availability throughout the Pacific but a spokeswoman for TCS now advises that they will only be accepting subscribers in Taiwan and China until after 1 January. Attempts to subscribe to all news Mandarin channel CTN from Hong Kong by New Zealand home dish and cable companies have not been successful to date although CTN has appointed representatives for their service in Perth and Sydney (where hotels are now able to subscribe at a cost of US\$32.85 per hotel room per year; a far cry from the US\$20 per month demanded by CTN for New Zealand users).

PAS-4, located at 68.5E and well beyond the New Zealand 'horizon', is being well received on C-band from Japan on dishes under 2m in size and central and western Australia as well. Early programmers on board include a curious test card from the "Sony Programme Network" which promises a 24 hour day free to air general entertainment channel. This service is being uplinked from Singapore according to the test card. Also on board and operating at this time FTA, ESPN Asia.

Television video is seen more and more often on Intelsat 183E/177W, largely in response to French Nuclear testing uplinks originating in Tahiti. Receiver IF of 983 MHz, right hand circular polarisation. Feeds include WTN, APTV and Tahiti IBV. Television on this satellite has been a non-event in recent years, use now possibly reflects "full status" of other Intelsats at 174/177/180E.

Auckland based aerialist distributor Signal Master has put a home satellite dish antenna on a trailer and is using it to promote ownership of DTH systems at consumer shows throughout Northland. The firm has also installed satellite antennas at its place of business and is now handling DTH products which it supplies to retailers for resale to consumers (see illustrations).

Rumour (and clearly so labelled) department. A container load of second hand home satellite dishes, receivers and accessories is reported to be in transit to Auckland; the purchase of a NZ entrepreneur. The antenna systems, all for C-band, are reported to have originated in a middle eastern country. It is known that Iran and UAE outlawed home satellite dish systems earlier this year; as many as 200,000 home dish

systems were dismantled by their owners or the authorities in Iran alone. And yes, they were likely to be dumped on the world market, "by the container load." Shades of second hand Japanese cars coming to New Zealand. The bad news is that any consumer grade dish that has been put up only comes down and is then returned to its original operating condition after much trial and tribulation. If one assumes the dishes were totally disassembled, to pack as many as possible into a container, then surprise awaiting the hapless buyer of such a container could be excruciating. Home style dishes, even in a desert country such as Iran, "weather" quickly and suffer significantly. To take an aged dish such as this apart and then actually expect to put it back together again such that it will work well enough to be saleable could be the height of optimism!

Digital? It's A State Of Mind!

Curious why Japanese electronic companies, except at consumer products level, seem to be slow on the uptake for digital communications? Thomson Consumer Electronics Chairman Alain Prestat thinks he knows why.

"The digital age gives the western electronic firms a culturally rooted advantage over Japan. Digital engineers work with a pencil, paper and a knowledge of Shannon theory. Analogue engineers work with oscilloscopes, waves and whistles. All of the field medals for digital technology have been won by Europeans and North Americans. Westerners think in black and white with yes and no answers; that is the digital way of thinking. The Japanese culture is quite different; the natural way of 'thinking' is in analogue!"

DBS (DirecTV) service in US has moved past 1,000,000 home dish systems sold and three competitive direct to home small dish (.4m) systems are on the horizon by the end of 1996. Canadian - American service AlphaStar plans to launch a 100 channel service by December using newly available AT&T Telstar satellite. EchoStar will use a purpose built pair of satellites that will offer up to 175 channels. EchoStar had an original Long March 2 launch date of September, now pushed back until December because of Long March explosion with ApStar 2 this past January. EchoStar says, *"If Long March launch fails, we have a backup schedule with LKE Company launch facility in Kazakh Republic of Russia using Proton launch vehicle."* EchoStar DBS satellite is undergoing transmit antenna test at this time, requires 30 day advance notice from Chinese before satellite can be shipped (by air) to China for launch preparation. EchoStar has signed agreement with Philips to produce MPEG-2 "DISH" receiver systems for use with the EchoStar DBS satellite system; units will be distributed under Magnavox and Philips branding. Already operating in US, in addition to DBS with 1m subscribers, is cable TV funded Primestar which claims 575,000 home subscribers. DBS receiving systems (complete with antenna, LNB) are retailing in US for under US\$600 in most areas. Toshiba is latest Japanese firm to be licensed to build DBS / DirecTV receiver systems; firm plans to begin deliveries in June 1996. At present time RCA / TCA and Sony are in field, Uniden is on the way; Toshiba will be fourth supplier. Receiver system manufacturers must be licensed by RCA / Thomson which holds key patents in field. Coming up: the exportation of US bred DBS television to South America, then Europe and Asia. DirecTV and EchoStar have both announced intentions to expand outside of North America with new satellites.

Five million satellite systems are in hands of US consumers according to report by FCC, nearly 7% of all home units. FCC is exploring whether it should issue rule making to pre-empt local zoning ordinances which in many cases prohibit and in most cases restrict satellite dish size and location. Inconsistent ordinances from municipality to municipality, state to state, are at core of problem since satellite services are nation-wide but regulations are local in nature making uniform availability of satellite services difficult for providers.

Intelsat is increasing rates for occasional use digital TV transmission services through the Global network. They had allowed bookings for air time to be cancelled without penalty in analogue format, propose to increase penalty for digital cancellations and to also raise rates by US\$4.50 per minute.

Dutch firm Nethold is launching 100 channel digital "Pay per view" satellite delivered service using Astra and Eutelsat satellites this month. Nethold has placed order for 1.1 million (digital) IRD units, said to be the largest IRD order to date. The company is to satellite deliver near-video-on-demand (15 minute staggered start times for specific feature films). The "release window" (see CTD 9505, p. 7) for NVOD pay per view movies in Europe is presently 30 to 45 days following release through video stores but Nethold hopes to be able to convince film distributors to allow simultaneous release.

Rupert Murdoch and Brasil's TV Globo are investing US\$500m in joint project to bring into South America selected TV programme channels from both STAR TV and Globo. Service package is to be launched by March on satellite package yet to be announced.

BSkyB profits for European market rose 67% in year ending 30 June to record NZ\$369.8m on sales rise of 41% BSkyB claims 4.16 million cable and DTH subscribers, against 3.48 million at end of fiscal year in 1994.

DIGITAL TV and RADIO

The warring DVD (digital video disc) camps have come to a truce. Negotiations begun at Germany's IFA show ended up with single DVD format as follows: 1.2mm-thick bonded disc and EFMPPlus modulation system. The agreement places strong emphasis on backwards compatibility with existing CD format, makes possible 4.7gigabytes per layer of information which translates to a movie up to 133 minutes in length. The system is said to allow rewriteable DVD (i.e., record your own) compatibility in the near future as it becomes available. Under the pact, individual disc makers can sell either single or two sided disc as the market dictates and as material being recorded requires. Threat of two separate, not compatible, systems brought back fears of Beta versus VHS wars of 1970s and

-TELECOM vs. Sky Network Numbers-

First you start with 100% of Sky, representing all of the outstanding stock ownership rights.

Of that 100%:

51.13% is owned by a group called Hong Kong Partners

16.30% is owned by Television New Zealand

15.85% is owned by the Sky originators, Craig Heatley and Terry Jarvis

8.80% is owned by Todd Communications

7.51% is owned by Tappenden Construction (headed by Alan Gibbs, Trevor Farmer)

0.41% is owned by (American sports network) ESPN.

Controlling interest, then, is vested in the hands of Hong Kong Partners.

Not as much is on record concerning Hong Kong Partners of New Zealand Limited. It is known that there were originally four participants: **Ameritech** (an American telephone regional company operating in the upper midwest [Chicago et al] with an ownership stake in Telecom [NZ]), **Bell Atlantic** (the primary US regional telephone carrier operating Telecom [NZ]), **Telecommunications Inc.** (TCI; the world's largest cable television operator with dozens of cross media investment ties to the likes of CNN, HBO et al), and **Time Warner** (possibly the world's second largest cable television operator with dozens of cross media ownership parcels held in a wide variety of movie, television and publishing firms). It is Time Warner that is currently buying out Ted Turner's CNN family of holdings.

Hong Kong Partners are said to have invested \$100 million in their 51.13% stake in Sky Network in 1991. This was the capital that allowed Sky to move ahead with its own ambitious growth pattern here. It is the reported 25% of Hong Kong Partners held by Ameritech and the 25% held by Bell Atlantic which is being sold to Telecom (NZ).

The amount being paid by Telecom (NZ) is not public.

There are two important people at Sky Networks, both Americans. Nate Smith is generally regarded as the representative on behalf of Time Warner here while John Fellett is generally recognised as the TCI 'man'. Neither Bell Atlantic nor Ameritech has a highly placed executive at Sky, a fact seen as a bit of a mystery by those who have assumed all along that the four companies owning Hong Kong Partners were in fact equal in the investment.

At risk is the continued top-man positions held by Smith and Fellett. But only if Telecom (NZ), after actually acquiring the stock interest in Hong Kong Partners held by Ameritech and Bell Atlantic, does in fact then exert majority control over Sky through 'HKP'. If in fact HKP is made up of four totally equal partners, then Telecom (NZ) ends up with not the often reported "25% of Sky" but in fact 50% of 51.13%; or **25.565%** of Sky. That would certainly entitle them to multiple spots on the Sky Board of Directors, but their actual voting power should be no more than that held jointly by TCI and Time Warner. In other words, if on a contentious issue there are differences of voting position between TCI + Time Warner, and, Telecom (NZ), their respective votes at the Board level would appear to cancel one another out.

Of the 'other' stockholders, Television New Zealand holds an important voting wedge and is likely to be heavily pressured by both sides in any matter that can be decided by "majority vote." Television New Zealand has in the past year publicly attacked Telecom (NZ) on a number of occasions, primarily in support of TVNZ's ownership role in Clear Communications, a competitor of Telecom. TVNZ is involved in the development of an Asia-Pacific satellite distributed sports channel, a project which includes TCI as a partner. That TVNZ is likely to automatically side with either group is not a given; that they have more in common long term with TCI (and Time Warner) than with Telecom is, however, apparent. It is in the long term interest of TVNZ that if New Zealand is to have pay TV competitive to their free to air broadcast service, the present limited channel capacity Sky system (of which they own a piece of the action) is a far better system to support than a Telecom fibre optic service in which they have no direct investment.

All of the logic therefore suggests that while Telecom (NZ) may end up with 25.565% of Sky under its thumb, at the end of the day it may have very little real influence on the future of Sky here. Further, given the deep seated hostility between all cable operators (such as TCI and Time Warner) and all telephone companies world-wide, there is little reason to expect that Sky's programming assets will find their way to Telecom cable services without a battle at the Sky board level.

On the opposite side, if Telecom (NZ) was able to secure additional stock from other stockholders, or, if the division in Hong Kong Partners was not 25% to each of four participants and Telecom's control of HKP is greater than 50%, then all bets are off. Telecom needs a pay TV vehicle, now; they would like Sky to be it.

early 80s and the confusion this brought to the marketplace. The pact on a single technology and a single set of standards has the blessing of the major movie studios who were insisting on certain features, not the least of which was the ability to place a typical full length movie on a single side of a disc. Industry sources are now predicting a world-wide rollout of the new consumer level product for September 1996. At the end of the DVD rainbow is the ability to record on a disc on the consumer home, which coupled with all digital technology of system will be death knell for VHS analogue tape system in world. First to feel this will be the video rental stores who will be faced with complex product stocking challenges as movies by mid 1996 begin to be offered to them in both analogue tape and DVD (CD) formats. The advantages to consumers of DVD is likely to drive the marketplace and part of the settlement is a general agreement that DVD player units will come out in the US\$500 range when first introduced.

Thomson Consumer Electronics has received what it claims to be "World's largest set top decoder box order" from consortium of US telephone firms. Order calls for 3 million set-top boxes and other equipment with value in excess of US\$1B. Telephone firms Bell Atlantic, Nynex and Pacific Telesis will use the all digital boxes to launch into an interim pay TV delivery service using their recently acquired MMDS licenses in USA. Set-top decoders will have Apple Power PC processor, 4 megabits of total memory to support features that include on screen programming guide that will be constantly refreshed (updated) by transmissions from sending stations. Boxes are also MPEG-2 designed with a 2400 baud telephone modem. This points at ability of MMDS customers to order up movies and features when offered through their existing telephone connection. First delivery of set-top units will be in June-July 1996. Order includes TCE also supplying DiviCom encoding system and Nagra Vision security (conditional access). General Instrument was also a bidder on massive project.

Advanced TV standard proposed by US Grand Alliance is drawing criticism of Apple Computer Advanced Technology Group President Donald Norman. He claims ATV has four shortcomings which will inhibit direct interfacing between computer and HDTV equipment: Interlacing, the refresh rate, the pixel aspect ratios and allowances for transmission of data and code. Norman is especially critical of the frame rate, believing refresh rates of 70 per second are required to eliminate flicker on large screens. He urges a compromise frame rate of 24 per second which would then allow multiplication to 72 frames per second for display purposes.

Eight UK firms have joined hands forming Digital TV Group to implement terrestrial MPEG services in England. British launch of digital broadcasting is scheduled for 1997. New group includes traditional broadcasters (i.e., BBC et al), parts suppliers (i.e., Motorola), equipment manufacturers (i.e., PACE).

Hitachi has demonstrated prototype of "All Format Advanced TV Decoder," a 'black box' that will allow consumers with old style analogue television sets to receive digital broadcasts albeit without the interactive features of most planned ATV systems. Hitachi has no present plans to sell the 'black box' as a stand alone device, suggests that by adding circuitry to existing analogue receivers, consumers would pay US\$50 more per receiver but at same time know their new receiver would not be totally outmoded by stations switching to digital transmission formats. Hitachi believes the availability of their All Format Decoder (AFD) could speed a mass move to digital "by as much as 6 years" over the normal replacement conversion of analogue TV sets with new digital models.

Nokia, exhibiting at Germany's IFA, has demonstrated open architecture "Multimedia Terminal" which it claims can be digital processor for satellite television, terrestrial (digital) television, consumer (digital, such as camcorder) electronic systems. The terminal looks at MPEG-2 data rates between 1 and 50 megabytes per second, automatically adjusts its own internal processor to speed being received. Entire system is on a ROM (read only memory) chip, and uses flash memory technology so that it can be instantly upgraded by the broadcast transmission at any time.

Sony has major pricing differences in their brand new 3 CCD digital video camcorder units being introduced at this time in Europe, North America and Japan. European version (which is PAL and therefore compatible with New Zealand and Australia) is priced at US\$4,785 (a single CCD version is US\$3,075), while in US it is US\$4,199 and in Japan it is US\$3,400. Sony reported its first month's production was sold out in advance of shipment and current delivery in Japan runs 30 days or more after ordering. Sony plans to introduce a home consumer DVC deck but reports that copyright protection agreement must first be accepted by industry. The flawless copy ability of DVC units in consumer hands has raised major fears with programme rights owners who worry that unlike VHS home units which degrade quality such that only limited number of copies can be successfully "dubbed down," the DVC unit will make perfect dubs every time.

CONSUMER ELECTRONICS

Thomson Consumer Electronics has reduced pricing on 31, 32 and 35" direct view TVs by US\$100 for northern hemisphere fall selling season. Pricing in USA is significantly lower than in Pacific: GE 31"/787mm has suggested retail of US\$549, RCA 35"/889mm with PIP (picture in a picture 2 for 1 display) US\$1199. PIP models have dual

tuners to allow simultaneous reception of two separate channels. "Small screen" sets in 25"/635mm category now sell for US\$249. TCE sold record (US) \$4.3B in consumer electronic goods in USA in most recent fiscal year, up 27% from prior year.

Canon has begun selling new Hi-8(mm) camcorder that focuses on portion of image which the operator's eye follows. Camera detects movement of eyeball and this movement directs the camera's automatic focusing system to in turn adjust focus to that portion of image. There is more: Inside of viewfinder user has seven function display and by staring at any of the seven display panels in viewfinder for 2 seconds, the camera responds to the command of the panel. Controls by eyeball include on and off, strobe, freeze frame, fades, mosaics, overlaps and zoom. Hands free camcorder operation! Price is US\$2,200 suggested list.

Study of total European consumer electronics market (covering all products from audio to games) by Marantz suggests that 1990 was peak year for product sales. Since that time virtually all categories (other than satellite television reception systems) has declined. Study also relates that in 1994, 43% of TV sets sold in UK were 13"/334mm or smaller.

Japanese firms are now in race to be first past the post with Plasma (PDP) TV screen production facilities. Plasma technology offers flat screen, hang-on-a-wall, displays. Matsushita and Fujitsu, NEC and Sony are all now retooling plants in Japan for the new technology. Mitsubishi is already running pilot runs of 20"/508mm screens, plans to have these first Plasma screen receivers in marketplace by April. Like any new technology, initial offerings will be expensive (US\$5,000 up) but Fujitsu forecasts drops to US\$2,000 by year 2000 with "average screen sizes" of 62" / 1575mm.

Panasonic has discovered a possible Camcorder "after market;" a plug in 3.2" LCD colour monitor for review of recorded material (including during shooting). DisplayMate plugs into 1993-1995 Panasonic camcorders, swivels over 180 degree axis, and has suggested list price of NZ\$575.

Chinese production of television receivers rose by 13.9% in first seven month of 1995 to a record 18,412,000. Of this, 10,355,100 were colour. One problem area: The Chinese are unable to produce sufficient high quality picture tubes to keep up with their own production numbers, importing 910,000 in the month of June alone. Largest deflection yoke plant, Xianyanhg Deflection Group Corp, produced just over 8 million in recent 12 month period, exporting 60% to other countries.

Latest audio delivery broadcast service on Internet is (American) ABC Radio which is now making available real-time newscasts. Key in <http://www.abcradionet.com> for a listen.

Study by Price Waterhouse Entertainment, Media & Communications Group points up strange anomaly in structure of royalties. It seems that for typical VHS tape, patent holder JVC receives 2% royalty at point of plastic shell loading with tape. From introduction of VHS in 1976 to present time, royalty costs for tape makers has dropped by 83% (to 16.7% of its 1976 value). Audio CD royalties now average 14% at point of pressing CDs; typically US\$0.60 cents per CD at that point. Videogame cartridges are most expensive royalty items in consumer marketplace; 47% of cartridge cost at point of manufacture goes to patent holder.

Latest VHS average selling price figures world-wide have continued downward spiral. Cost of VHS tape cassette is measured at point of manufacture, in shipment to distributors. Factory price of average VHS tape was US\$1.67, down from US\$1.75 in 1994. VHS-C videotapes have dropped to US\$3.19 from 1994 \$3.41. Audio cassettes averaged US\$0.74.1 versus \$0.81.4 year ago.

CABLE/FIBRE/MMDS/PAY TV

Whangarei is close to start of trials (mid October) by Auckland based firm Spectrum Cablevision Limited for cable TV service. Firm director Allan Stephen has established a satellite receiving and retransmission site in the Morningside district, and cable system apparently follows the technical outlines established by Pacsat for Greymouth, using 12 GHz microwave to distribute incoming programming to "cell sites" throughout city. Individual "cell blocks" are being wired, like Greymouth, a block area at a time. The initial reports suggested \$15 per month for the first channel of the service, \$5 additional as new channels are added. Programming sources identified to date include TNT-Cartoon, Discovery, and CNN. An initial no charge trial marketing service is planned.

Telecom (NZ) may go ahead with 15% of their near term fibre optic plant rollout above ground, using existing utility poles in areas where they are available. Although most utility lines in Auckland city centre are underground, many suburban areas such as Newmarket and Parnell still have (well aged) above ground poles in place. And while everyone agrees that at some future, unspecified date even these lines will go underground, there is no near term timetable for most of the above ground plant being buried. Impressed with the speed at which Australia's Optus Cable has been able to install above ground coaxial and fibre optic cables in suburban neighbourhoods there,

Telecom is expected to begin limited (perhaps token for first-past-the-post PR purposes) installation of new plant lines as early as this month. Australian supplier Bell IRH is conducting a training course for Telecom personnel at this time; ECS / Leathams is to supply SAX and Diamond brand pole line hardware to the project initially

Bell Atlantic video dialtone (VDT) tests with Futurevision of America in Dover Township, NJ has passed initial equipment interface tests. BA will complete testing of reliability of system over next 60 days, then offer service to initial 200 homes. Video dialtone is interim telephone technology using hybrid fibre and coax architecture. Under rules of (US) FCC, a VDT provider such as BA must make available bandwidth on the network to programmers for fees that are reasonable and justified. New Zealand lacks any such Commerce oversight procedure which in theory allows Telecom (NZ) to deny access to a broadband network to anyone it chooses to ignore. That is one significant area of contention between Telecom and would be programmers here. Pacific Bell, in its most recent FCC filing, contemplates making 28 of the programme channels available to a single provider (such as a cable company which would programme all 28 channels), another 13 (to 15) broadcast channels that will be available to all users (made up of free to air programming), while 27 (to 29) channels will be available on a part or full-time basis to individual programmers. Telecom (NZ) is on record believing it should *"not be forced to make any of its bandwidth available to programmers it chooses not to deal with for the first 10 to 15 years of operation."*

Howick hybrid fibre coax suburban partnership between Sky and Bay of Plenty Electricity is pulling "cable" into the ground at this time. System is one of several being worked on by the partnership and there have been installation problems.

Greymouth Pacsat claims to have 65 operating cable TV "cell sites" now functioning in the community with 250 subscribing homes connected. The service is presently carrying full-time service from Discovery, TNT + Cartoons, CNNI News and Country Music Television plus partial time service from other satellite fed services. Pacsat plans an increase in cell sites to 150 covering the region from Cobden through Paroa over the coming 12 months along with an increase in programming channels as Palapa C1 and AsiaSat 2 come on line around the first of the year. They are charging \$125 for initial connection, and \$30 a month for the multiple channel service. The Greymouth Evening Star (newspaper) has begun to carry the TV programme schedule for the service as a regular feature.

Noumea Cable TV (New Caledonia) has a December 1995 launch date planned with 9 channels of programming to be delivered by MMDS at US\$60 per month following an installation charge of US\$100 per month. The owner of the system is Societe Francaise des Communications et du Cable which is majority owned by US firm UIH. Two Noumea shareholders include Jean Claude Racine and Didier Lerous. Only CNN(I) will be delivered live; the balance of 8 channels is being taped in Paris and replayed in Noumea from a purpose built studio.

Sky, the centre of a corporate struggle for control by Telecom (NZ), has apparently experienced a significant slow down in the retention of new subscribers. The service growth began to flatten out in April and by June was leveling off with as many homes dropping the service as taking it up for the first time, according to Sky installing dealers surveyed by CTD. It did manage to claim 200,000 subscribers late in July but possibly only be delaying the disconnection of homes that had requested they be taken off the subscriber rolls. Installers in the Auckland area who have been accustomed to doing several Sky installs per day are now grumbling that they are lucky to receive several per week. A recent \$1 install promotion saw a significant uptake by consumers who figured out this was a low cost method of getting a next-to-free UHF aerial installed (to receive ATV and Max services) and by cancelling the Sky service (in some cases only days later) they were able to keep the aerial which Sky does not find cost effective to take back down again. Sky's penetration is calculated at just over 20% of all homes where the service is available but this follows a (US) cable television accounting procedure that works as follows: Commercial customers (such as motels) are counted as one dwelling unit for census purposes but as multiples of that for subscription purposes. If a 20 unit motel pays \$520 per month for the package of Sky services, the motel counts as one potential dwelling but as 10.4 subscribers; the latter is derived by taking the total sum received and dividing by the monthly cost to a single dwelling (\$520 divided by \$50 for example). Thus with motels and commercial accounts amounting to 5% of the total potential dwellings, but as much as 10% of the total revenue received by Sky, the actual penetration of homes on a census basis is significantly lower than the 20% range claimed.

Mini-profile of Cyberstar Networks which is building the Nelson hybrid fibre cable delivery system. Firm is headed by one Donald G. Jones, said to be a key technology advisor to the US House of Representatives. Jones is given credit with establishing the Congressional Internet 'THOMAS' information retrieval system for the Library of Congress. THOMAS contains all of the bills pending before Congress and the Daily Congressional Record. Cyberstar has constructed an advanced fibre optic system for the University of Wisconsin and US Cyber as an Internet operator in the US. The New Zealand Cyberstar Networks operation intends to build a fibre based system

designed initially for video (i.e., cable or pay TV) but capable from the outset of also carrying telephony, data transmission and conducting power load management functions. The company has also stated that when the New Zealand government decides to privatise Radio New Zealand, it will be a serious bidder for the network. Amongst the staff members is one Robert Shaeffer who is Director of Technology Planning. Schaffer is a 20 year plus cable television veteran, presently serves as national treasurer and Head of Finance for the Society of Cable Television Engineers, an international trade association of cable TV technical people world-wide.

Time Warner will be the surviving corporation if (US) federal agency approvals are gained for its stock purchase of Turner Broadcasting (parent of CNN, TNT + Cartoons et al). The ramifications of the US\$7.5B range deal are staggering: TW is attempting to sell off its cable television systems which analysts describe as "debt ridden." To be able to sell the cable, TW must buy out telephone company US West or somehow settle with them as US West is opposed to Turner acquisition; and also settle with two Japanese minority partners Toshiba and Itochu. New combined corporation, if approved, will have largest feature film library in world, totalling more than 5,000 of which 3,000 come from Turner's purchase of MGM library several years ago.

Time Warner (cable TV) showpiece all interactive, mostly digital cable TV trial system in Florida is running way behind schedule. TW had forecast 4,000 homes connected in 1994; actual figure today is 30 homes. At same time, Bell Atlantic had forecast 1.2 million US homes connected to its video dialtone service by end of 1995; actual number is '0'. And Pacific Telesis had forecast 1.5 California homes connected to its VDT system by mid 1995, actual number is also '0'. Time Warner test system has run into significant cost overruns not the least of which is the cost of the interactive "set top" boxes which go into consumer homes. TW is presently paying US\$7,000 per interactive box, and manufacturer says price will not drop to under US\$1,000 per set top before 2000. Is it any wonder why Telecom NZ is not rushing into fibre optic interactive networking in New Zealand?

General Instrument has announced a deal with Australian cable supplier Olex Cables to manufacture coaxial cables. Firm is to be known in trade as Vision Cable Pty Ltd and plant being constructed is in Melbourne area. General Instrument owns CommScope Cable Company, a significant supplier of coaxial cables in USA.

TERRESTRIAL BROADCASTING

United Christian Broadcasters (UCB) is advising select members of the broadcasting trade they hope to have at least a test signal "on the air" in Auckland market by early January. Firm reportedly has received funding recently to allow construction of its UHF station there and has been actively negotiating with US cable and broadcast firm "The Family Channel" for programming material. UCB holds 39 UHF channel licences of which 21 are for operating power of 10kw or more (CTD 9312. p. 38).

Preparing for the formal "sale" of television channels frequencies to TVNZ and TV3, the Ministry of Commerce has worked out a procedure that appears to protect the "rights" of amateur radio operators who occupy a small spectrum segment within New Zealand TV Channel 1 in those areas of New Zealand where this channel is not in use. Individual TV channel assignments are based upon engineering criteria to prevent interference between two or more transmitters operating within the same channel (number). A portion of TV channel 1 was, until 1959, an amateur radio "band" and in fact in most countries of the world it continues to be a ham radio band today. New Zealand and Australia in the Pacific kicked the hams off the band when TV started, but Australia has been routinely closing down their transmitters on this channel for several years (in favour of moving the programmes to UHF) because of the significant "skip" interference and other problems found in this portion of the spectrum. Under pressure from the New Zealand Association of Radio Transmitter (ham radio group), hams were allowed back into the spectrum space five years ago on the condition that they cause no interference to any TV viewers who have channel 1 reception. This has limited amateurs to using this (6 metre) band in only scattered New Zealand locations; Auckland and Christchurch are two such locales, Wellington and Hamilton are not. In selling off the frequencies from the government to TVNZ and TV3, the Ministry of Commerce has adopted a policy that will nominally allow amateurs who already have the special permits required to operate in this band to continue to do so under the same non-interference conditions. Longer term, there is considerable rationale for following the same course as Australia and moving all of the channel 1 transmissions to UHF or some other VHF spectrum where interference is not such a problem. TVNZ has proposed such a move itself, pointing out that when MPEG digital format television arrives in New Zealand that use of this particular TV channel will be a major problem because of "ghosting." MPEG transmissions, while technically able to cure ghosting, are as a practical matter subject to many special problems when the incoming signal arrives at the TV set only after bouncing through hills and off of nearby tall buildings. TVNZ engineering is suggesting that channel 1 (and other band I channels) be vacated by television simultaneous

Voice of America (VOA) is entertaining proposals to sell commercial time for music and entertainment programming; news material would continue to be operated by VOA on non-commercial basis.

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